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मानक

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Mazdoor Kisan Shakti Sangathan

“The Right to Information, The Right to Live”

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Jawaharlal Nehru

“Step Out From the Old to the New”

IS 13630-9 (2006): Ceramic Tiles - Methods of test, Sampling and Basis of Acceptance, Part 9: Determination of crazing resistance - Glazed tiles (see IS 13630 : Parts 1 to 15) [CED 5: Flooring, Wall Finishing and Roofing]



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“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartḥari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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IS 13630 (Part 9) : 2006

भारतीय मानक
सिरैमिक टाइलें - परीक्षण पद्धतियाँ,
नमूने लेने तथा स्वीकार्यता का आधार
(पहला पुनरीक्षण)

Indian Standard

CERAMIC TILES — METHODS OF TEST,
SAMPLING AND BASIS FOR ACCEPTANCE

(First Revision)

ICS 91.100.23

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

FOREWORD

This Indian Standard (Parts 1 to 15) (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Flooring, Wall Finishing and Roofing Sectional Committee had been approved by the Civil Engineering Division Council.

This standard was first published in various parts in 1992-93. This is the first revision; having all parts combined in one publication, of the standard in which the following major changes have been incorporated:

- a) As per the decision taken in the last meeting, the requirements of all the parts have been included in one volume and the revised standard has been brought in line with ISO 10545 (various parts).
- b) The requirements for determination of bulk density have been added in Part 2 and a few changes have been made in the requirements for determination of water absorption.
- c) A few modifications have also been made in Part 3.
- d) Requirements for determination of breaking strength have also been added in Part 6.
- e) Requirements for determination of glazing resistance tests have also been modified in Part 9.
- f) A new test for determination of impact resistance by measurement of co-efficient of restitution has been added as Part 14.
- g) IS 13711 : 1993 'Sampling and basis for acceptance' has been amalgamated with Part 15 of this standard.

In formulation of this standard considerable assistance have been derived from the following standards:

- ISO 10545-1 : 1995 Ceramic tiles — Part 1 : Sampling and basis for acceptance
- ISO 10545-2 : 1995 Ceramic tiles — Part 2 : Determination of dimensions and surface quality
- ISO 10545-3 : 1995 Ceramic tiles — Part 3 : Determination of water absorption, apparent porosity, apparent relative density and bulk density
- ISO 10545-4 : 2004 Ceramic tiles — Part 4 : Determination of modulus of rupture and breaking strength
- ISO 10545-5 : 1996 Ceramic tiles — Part 5 : Determination of impact resistance by measurement of coefficient of restitution
- ISO 10545-6 : 1995 Ceramic tiles — Part 6 : Determination of resistance to deep abrasion for unglazed tiles
- ISO 10545-7 : 1996 Ceramic tiles — Part 7 : Determination of resistance to surface abrasion for glazed tiles
- ISO 10545-8 : 1994 Ceramic tiles — Part 8 : Determination of linear thermal expansion
- ISO 10545-9 : 2004 Ceramic tiles — Part 9 : Determination of resistance to thermal shock
- ISO 10545-10 : 1995 Ceramic tiles — Part 10 : Determination of moisture expansion
- ISO 10545-11 : 1994 Ceramic tiles — Part 11 : Determination of crazing resistance for glazed tiles
- ISO 10545-12 : 1995 Ceramic tiles — Part 12 : Determination of frost resistance
- ISO 10545-13 : 1995 Ceramic tiles — Part 13 : Determination of chemical resistance
- ISO 10545-14 : 1995 Ceramic tiles — Part 14 : Determination of resistance to stains
- ISO 13006 : 1998 Ceramic tiles — Definitions, classification, characteristics and marking

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

**CERAMIC TILES — METHODS OF TEST,
SAMPLING AND BASIS FOR ACCEPTANCE**

PART 9 DETERMINATION OF CRAZING RESISTANCE — GLAZED TILES

(First Revision)

1 SCOPE

This standard (Part 9) covers a method of test for determining the crazing resistance of all glazed tiles except when the crazing is an inherent feature of the product.

2 TERMINOLOGY

2.1 For the purpose of this standard, the following definition shall apply.

2.2 **Craze** — A craze is a crack, showing as a fine hairline, limited to the glazed surface of a tile (see Fig. 1).

3 PRINCIPLE

The resistance to the formation of crazes is determined by subjecting whole tiles to steam at high pressure in an auto clave and then examining the tiles for crazes after applying a stain to the glazed faces.

4 APPARATUS

4.1 A steam autoclave of sufficient internal volume to accommodate five tiles under test with adequate separation. Ideally, the steam is fed from an external source in order to maintain a pressure of 750 ± 20 kPa with a steam temperature of $168 \pm 1^\circ\text{C}$ for 2 h. Then the pressure is allowed to fall rapidly as possible to atmospheric temperature and the test specimens are allowed to cool to room temperature.

4.2 Alternatively, a directly heated autoclave may be used.

5 TEST SPECIMENS

5.1 At least five whole tiles are tested.

5.2 Exceptionally large tiles may be cut into pieces for enclosure in the steam autoclave, but all the pieces shall be tested. The cut pieces should be as large as possible.

6 PROCEDURE

6.1 First, examine the tiles for visible defects by viewing them with the naked eye (with the aid of spectacles if usually worn). All test specimens shall be free from crazes at the commencement of the test.

6.2 Place the test specimens in the autoclave in such way that there is air space between them. Raise the pressure of the autoclave gradually for a period of 1 h until it reaches 750 ± 20 kPa. This pressure is to be maintained for 2 h. Then turn off the steam source or the heat supply in the case of directly heated autoclaves, allow the pressure to fall as rapidly as possible to atmospheric and cool the test specimens in the autoclave for 30 min. Remove test specimens to the laboratory atmosphere, place them singly on a flat surface and allow them to cool for a further period of 30 min.

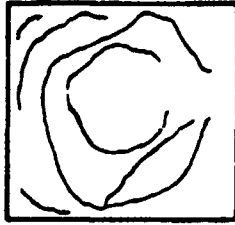
6.3 Brush a suitable stain, such as 1 percent aqueous solution of methylene blue containing a small quantity of wetting agent, on to the glazed surface of the test specimens. After 1 min wipe off the stain with a damp cloth.

6.4 Examine the test specimens for crazes taking care to avoid confusing crazes with scratches and ignoring cracks.

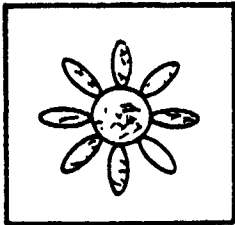
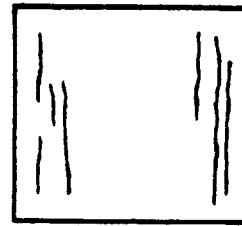
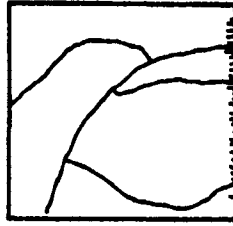
7 TEST REPORT

The test report shall contain the following:

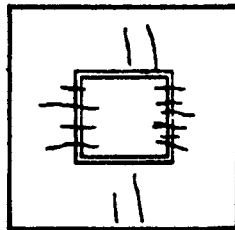
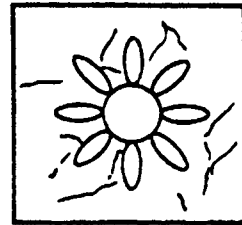
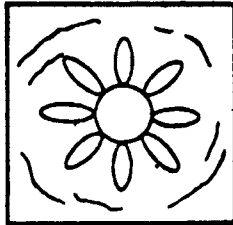
- a) Description of the tile;
- b) Number of test specimens;
- c) Number of test specimens showing crazing; and
- d) Description of the crazing (written text, drawing or photograph).



PLAIN TILES



DECORATED TILES



RELIEF SURFACED TILES

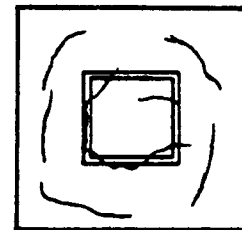
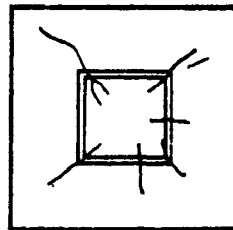


FIG. 1 EXAMPLES OF CRAZES

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This Indian Standard has been developed from Doc: No. CED 5 (7358 to 7372).

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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